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=> d his

     (FILE 'HOME' ENTERED AT 16:13:23 ON 08 NOV 2005)
     FILE 'CA' ENTERED AT 16:13:30 ON 08 NOV 2005
L1        57915 S (SN OR TIN OR STANNIC)(2A)OXIDE OR SNO2
L2         1286 S L1(5A)(PLATINUM OR PLATINIZ? OR PT)
L3          448 S L2 AND CATALY?
L4            3 S L2 AND(THERMISTER OR THERMISTOR OR PELLISTOR OR PELLISTER)
L5          464 S L2 AND(SENSOR OR DETECTOR OR SENSING OR DETECTING OR
MONITOR?)
L6          130 S L3 AND L5
L7           88 S L4,L6 NOT PY>1999
L8           43 S L4,L6 AND PATENT/DT
L9           98 S L7-8

=> d bib,ab 1-98 l9
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L9 ANSWER 15 OF 98 CA
AN 131:63803 CA
TI Selectivity improvement of SnO2 films by superficial metallic films
AU Sauvan, M.; Pijolat, C.
CS Centre SPIN Ecole des Mines, St-Etienne, 42023, Fr.
SO Eurosensors XII, Proceedings of the 12th European Conference on Solid-State Transducers and the 9th UK Conference on Sensors and Their Applications, Southampton, UK, Sept. 13-16, 1998 (1998), Volume 1, 625-628. Editor(s): White, N. M. Publisher: Institute of Physics Publishing, Bristol, UK.
AB The purpose of this paper is to demonstrate the possibility of modifying the sensitivity of tin dioxide (SnO2) films by depositing metallic **catalysts** on the surface of SnO2 layer. The aim is to reduce the effect of ethanol which is considered as an interfering gas in many domestic or industrial applications. Two **catalysts** have been so studied (platinum and palladium) deposited on two types of SnO2 layers which present different textures. Both **catalysts** reduce the sensitivities to ethanol, carbon monoxide and methane. But the decrease of the alc. sensitivity is more significant and consequently, the relative sensitivities to CO and CH4 are increased. This effect is more important with the SnO2 layers which have a high porosity.

L9 ANSWER 17 OF 98 CA
AN 130:360773 CA
TI The semistor: a new concept in selective methane detection
AU Williams, Geraint; Coles, Gary S. V.
CS Department of Electrical and Electronic Engineering, University of Wales Swansea, Singleton Park, Swansea, SA2 8PP, UK
SO Eurosensors XII, Proceedings of the 12th European Conference on Solid-State Transducers and the 9th UK Conference on Sensors and Their Applications, Southampton, UK, Sept. 13-16, 1998 (1998), Volume 1, 209-212. Editor(s): White, N. M. Publisher: Institute of Physics Publishing, Bristol, UK.
AB Hybrid devices were developed, combining technol. assocd. with both **catalytic** and semiconductor based **sensors**. They consist of narrow diam. platinum wire coils coated with a low resistivity tin dioxide based formulation which are typically operated in a bridge type circuit. Factors affecting performance, such as **sensing** layer compn., coil pitch and length of

firing time were studied, together with effects resulting from the incorporation of addnl. surface filter layers to improve selectivity. Humidity and ambient temp. effects, normally assocd. with tin dioxide based **sensors**, can be eradicated by employing a compensating element. This uses a filter layer which removes target gas response while retaining the same humidity and temp. dependence as the **sensor**.

L9 ANSWER 20 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 130:186269 CA
TI **Sensor** properties of **Pt** doped **SnO2** thin films for **detecting** CO
AU Tadeev, A. V.; Delabouglise, G.; Labeau, M.
CS Laboratoire des Materiaux. el du Genie Physique, Institut National Polytechnique de Grenoble, UMR 5628, BP46, Saint Martin d'Heres, F-38402, Fr.
SO Thin Solid Films (1999), 337(1,2), 163-165
AB Polycryst. **Pt**-doped **SnO2** thin films have been integrated to silicon substrate by ultrasonic spray deposition. This deposition technique differs from the usual SnO2 deposition methods by using a liq. source. It allows one to obtain a very fine and homogeneous dispersion of Pt aggregates which act as a **catalyst** for the low temp. CO detection (25-100°) by conductance change. The influence of synthesis temp. (460-560°) and concn. of Pt additive (0.1-5 at.%) on gas sensitivity has been studied. The realization of gas **sensor** includes a gas sensitive highly porous layer (**SnO2/Pt**, thickness: ~1 μm). The results of elec. measurements under 300 ppm of CO for thin films in a dynamic and quasistatic regime are discussed. The narrow peak of gas sensitivity in the range of low temps. (25-100°) is obtained for about 2 at.% **Pt** in the **SnO2** film.

L9 ANSWER 27 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 128:265525 CA
TI Tin oxide-based methane gas **sensor** promoted by alumina-supported Pd **catalyst**
AU Kim, Jae Chang; Jun, Hee Kwon; Huh, Jeung-Soo; Lee, Duk Dong
CS Dep. Chem. Engineering, Kyungpook National Univ., Taegu, 702-701, S. Korea
SO Sensors and Actuators, B: Chemical (1997), B45(3), 271-277
AB In an attempt to promote the sensitivity of tin oxide-based **sensors** to methane gas, the parent tin oxide powder, pure or loaded with Ca and/or Pt (0.1%), was mixed with a fixed amt. (5%) of alumina-supported Pd **catalyst** (net Pd loading 0.25%). The resulting **sensor** was found to exhibit excellent **sensing** properties to methane in the concn. range of 500-10,000 ppm at 658 K regardless of the difference in starting tin oxide powder. It gave higher sensitivity to methane than any other **sensors** for which the tin oxide powder was either mixed similarly with supported Pt, Rh or Ni **catalyst** or loaded with the same amt. of Pd by conventional methods. The high dispersion of Pd (or PdO) particles appears to be responsible for the excellent promoting action of the supported Pd **catalyst**. At lower temp. of 573 K, however, the use of the Ca and/or **Pt** loaded powder of **tin oxide** gave higher sensitivity to methane than that of the unloaded powder. Probably the mechanism of methane **sensing** consists of two steps, i.e. activation of methane mols. on the supported Pd **catalyst** and surface reaction of the activated species on the tin oxide particles. The 1st step is rate detg. at 658 K, while the 2nd step becomes also important kinetically at 573 K, allowing the promoting action of

Pt to take place.

L9 ANSWER 28 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 128:26237 CA
TI **Catalytic sensor** for the detection of LPG
AU Rao, G. S. Trivikrama; Rao, P. Kanta
CS P and IC Division, Indian Institute of Chemical Technology, Hyderabad, 500 007, India
SO Reaction Kinetics and Catalysis Letters (1997), 62(1), 137-142
AB A single element **catalytic sensor** based on **SnO2:Pt catalyst** has been made to detect liquefied petroleum gas (LPG) at ppm levels. In this paper, **catalytic sensor** prepn., characterization and testing with LPG concns. are reported.

L9 ANSWER 33 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 127:44103 CA
TI **Catalytic** combustion-type gas **sensor**
IN Kawada, Yasuyuki; Tsuda, Koichi
PA Fuji Electric Co., Ltd., Japan
SO Jpn. Kokai Tokkyo Koho, 6 pp.

PI	JP 09101279	A2	19970415	JP 1995-255944	19951003
PRAI	JP 1995-255944		19951003		

AB The title **sensor** is highly selective to CO and is suited for use in detection of uncomplete combustion of CO gas. The **sensor** comprises a **sensing** element made by attaching **catalyst** support to a temp. sensitive resistor and a compensation element. **SnO2** is used as support and **Pt** is used as **catalyst**.

L9 ANSWER 45 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 123:348386 CA
TI A model for the gas **sensing** properties of tin oxide thin films with surface **catalysts**
AU Papadopoulos, C. A.; Avaritsiotis, J. N.
CS National Technical University of Athens, Electrical Engineering Department, Division of Computer Engineering, Zographou, Athens, 157 73, Greece
SO Sensors and Actuators, B: Chemical (1995), B28(3), 201-10
AB The effect of 2 types of surface additives (Pd and Pt) on the response of reactively sputtered thin films of SnOx gas **sensors** was studied in mixts. of zero grade air and CO. Exptl. results obtained with surface additives showed an abrupt conductance increase around 500 K when CO in the ppm range is present, a behavior which has not been obsd. with plain SnOx films. A semi-empirical model that explains this behavior is presented, based on the well-established theory for the cond. of ultrathin discontinuous metal films, i.e., activated charge carrier creation and tunnelling through potential barriers. The proposed model accounts for the dependence of film cond. on the thickness of the noble metal deposited on it and on the working temp. Results of the theor. anal. are in excellent qual. agreement with exptl. results.

L9 ANSWER 59 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 120:142560 CA
TI Thick film **sensors** for methane detection
AU Stein, S. J.; Huang, C.; Grunstein, T.; Sykora, G.

CS Electro-Sci. Lab., King of Prussia, PA, 19406, USA
SO Proceedings of SPIE-The International Society for Optical Engineering (1993), 2105(1993 International Symposium on Microelectronics, 1993), 1-6
AB Semiconducting, binary oxide-based **sensors** made in thick film form combined with Pt **catalyst** plus the use of appropriate dopants to exhibit n- or p-type behavior in **sensor** uses. A SbO_2-based material as a CH_4 **sensor** on alumina substrates was prepd. Conventional print and fire methods used to prep. **sensors** showing good sensitivity to low CH_4 concns., operate at 350-500° by applying current to printed heating elements. Effects due to various termination metalizations are noticed. Specific metallo-org. and thick film golds may be used as preferred terminations. Typical kinetic response curves are presented and show good reproducibility and response within <30 s. Recovery times are a little slower but still good, and are highly dependent on the vol. of the sample chamber used or the gas flow (usually convection) to the **sensing** element. **Sensor** resistance vs. CH_4 concn. shows a power law dependence in agreement with published data. **Sensor** resistance vs. temp. data exhibits n-type behavior; their slope can also be affected or modified by intentionally added dopants. Dopants must be carefully selected to give low **sensor** resistance vs. temp. effects. Dopants can also be chosen to lower sensitivity to other gases in mixts. contg. CO, CO_2, ethanol, etc. The combination of hybrid circuits, heaters, and **sensing** elements can allow considerable versatility in developing small economical gas **sensors** of many kinds of combination with hybrid circuits.

L9 ANSWER 60 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 120:22534 CA
TI Nickel, indium, and antimony implanted **platinum** and vanadium **catalyzed** thin-film **tin oxide** (SnO_2) gas **sensors**
AU Sulz, Gerd; Kuehner, Gerd; Reiter, Helmut; Uptmoor, Gabi; Schweizer, Werner; Loew, Helga; Lacher, Manfred; Steiner, Klaus
CS Fraunhofer-Institut fuer Physikalische Messtechnik, Heidenhofstrasse 8, Freiburg i. Br., W-7800, Germany
SO Sensors and Actuators, B: Chemical (1993), 16(1-3), 390-5
AB Thin-film technologies lead to low cost and reliable microsystems combining electronics and **sensors**. However, in competition with microelectronic fabrication **sensor** technologies exhibit a lack of experience creating difficulties in microsystem integration. A simple implantation process is introduced to improve thin-film **sensor** performance. In, Ni and Sb-doped thin-film V and **Pt catalyzed SnO_2** gas **sensors** are presented. The **sensor** response due to pulses of H_2, CO_x, NH_3, NO_2, CH_4 and EtOH at 100-400° is discussed.

L9 ANSWER 71 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 117:19593 CA
TI A family of tin oxide-based **sensors** with improved selectivity to methane
AU Butta, N.; Cinquegrani, L.; Mugno, E.; Tagliente, A.; Pizzini, S.
CS Dip. Chim. Fis. Elettrochim., Milan, 20133, Italy
SO Sensors and Actuators, B: Chemical (1992), B6(1-3), 253-6
AB The enhancement of the low-temp. (T = 310°) **sensing** behavior to methane of tin oxide-based gas **sensors**, resulting from different surface activators, has been systematically studied using the resistive **sensor** configuration. Pt, CeO_2, La_2O_3 and mixts. of them are employed as activators in view of their properties as a combustion **catalyst** (Pt) and an at. oxygen-transfer

system (CeO2). The exptl. results of this work show that mixts. of CeO2 and Pt present the best **catalytic** properties with respect to methane detection.

L9 ANSWER 81 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 107:243658 CA
TI Characterization of platinum/tin dioxide **catalysts** for carbon monoxide oxidation
AU Brown, K. G.; Schryer, J.; Schryer, D. R.; Upchurch, B. T.; Wood, G. M.; Miller, I. M.; Sidney, B. D.; Batten, C. E.; Paulin, P. A.
CS Old Dominion Univ., Norfolk, VA, USA
SO NASA Conference Publication (1987), 2456(Closed-Cycle, Freq.-Stable CO2 Laser Technol.), 219-25
AB The surface characterization of 2% and 1% **Pt** on **SnO2 catalysts** are reported. The N2 adsorption BET surface area for both **catalysts** was 6.9 m2/g. The CO chemisorbed area at 313K was 0.17 m2/g and 0.062 m2/g for the 2% and 1% **catalysts**, resp. **Monitoring** the reaction between CO and O2 by the same technique at the same temp. yielded a turn-over frequency (TOF) for the 2% **catalyst** of 2.7 × 102 mols. of CO2/site-s and for the 1% **catalyst** a value of 1.2 × 102. The ratio of the TOFs for the 2 **catalysts** is 2.2, which is approx. the ratio of the Pt loading.

L9 ANSWER 84 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 106:22670 CA
TI Gas **sensor**
IN Moseley, Patrick Timothy; McAleer, Jerome Francis; Mcaleer, Dr Jerome Francis
PA United Kingdom Atomic Energy Authority, UK
SO Brit. UK Pat. Appl., 7 pp.

PI	GB 2167192	A1	19860521	GB 1985-28233	19851115
PRAI	GB 1984-28934	A	19841115		

AB The elec. gas **sensor**, capable of **detecting** H2, CO, C2H4, or H2S, consists of a material capable of exhibiting a Seebeck effect (e.g., a semiconductor oxide material) having a **catalytic** region in which heat is produced as a result of a chem. reaction with the gas in the air, such that a temp. difference develops between this region and a 2nd region of the **sensor**, producing a Seeback voltage. Thus, a **SnO2** pellet having a **Pt**-Pd **catalyst** in a 1st region and 2 Au electrodes on the 1st and the remaining 2nd region of the pellet, where the electrodes were connected by Cu wires to a voltage measuring device, was used to sense H2 in air. Figures are included showing the Seebeck voltage profile of the **sensor** response.

L9 ANSWER 87 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 102:159753 CA
TI Gas **sensor**
PA Japan Auto Parts Industries Assoc., Japan
SO Jpn. Kokai Tokkyo Koho, 4 pp.

PI	JP 60014148	A2	19850124	JP 1983-123047	19830705
PRAI	JP 1983-123047		19830705		

AB A gas **sensor** (e.g., H or CO **sensor**) free from the adverse effects of moisture consists of the following: (1) a pair of gas-sensitive bodies from a metal oxide semiconductor (e.g., Pd or **Pt** activated **SnO2**) sensitive to a reducing gas on a substrate; (2) a gas-blocking layer (which is permeable to moisture but not to reducing gases) on 1 of the gas-sensitive bodies; and (3)

a measurement circuit which dets. the reducing gas based on the differences of the output of the gas-sensitive bodies. Addnl., a gas-oxidn. **catalyst** film such as Pt, Pd, Rh, and/or Ni can be provided on the gas-blocking layer. Optionally, the gas-blocking layer can consists of a porous insulator film from a metal oxide such as Al_2O_3 or MgO.

L9 ANSWER 98 OF 98 CA COPYRIGHT 2005 ACS on STN
AN 82:128864 CA
TI Apparatus for carbon monoxide detection
IN Senda, Tamotsu
PA Nohmi Bosai Kogyo Co., Ltd.
SO Ger. Offen., 14 pp.

PI	DE 2428488	A1	19750109	DE 1974-2428488	19740612
	US 4000089	A	19761228	US 1974-472900	19740523
PRAI	JP 1973-65353	A	19730612		

AB Device for the selective detection of CO in air or gas mixts., which may contain other reducing agents, is based on a sharp decrease in the elec. resistance, when CO is present, of a film or element contg. a sintered mixt. of **SnO_2** and **Pt** black. A tube of heat-stable insulating material such as Al_2O_3, ceramic, quartz, or borosilicate glass, is coated with a mixt. of SnO_2 80, $H_2PtCl_6.2H_2O$ 10, and clay 10 wt.%, heated in an oxidizing atm., and sintered at 900°. Also, the tube is furnished near each end with a Ag ring electrode having connecting wires. At 25°, resistance values were: in pure air contg. 1000 ppm CO 0.02; and in air contg. 1000 ppm H, C1-4 hydrocarbons C_6H_6, PhMe, MeOH, PhOH, Et_2O, and HCHO 1.9-3 MΩ. As a mixt. of air and CO is heated, a temp. is reached where the resistance sharply increases to the value in air, as at 40° for 100 ppm CO, 60° for 500 ppm CO, 100° for 1000 ppm CO, and ~120° for 100,000 ppm CO. The **catalytic** layer may contain 0.5-10% Pt black. Such elements connected in proper elec. circuits enable the detn. and **monitoring** of CO in combustion gases, including automobile exhaust gases.

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